ORIGINAL ARTICLE

Annals of Nuclear Medicine Vol. 12, No. 6, 363–368, 1998

Glucose tolerance and myocardial F-18 fluorodeoxyglucose uptake in normal regions in coronary heart disease patients

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To elucidate the relation between glucose tolerance and myocardial uptake of F-18 fluorodeoxyglucose (FDG), FDG-PET with 75 g oral glucose loading was performed on 43 coronary artery disease patients (twice in 2 patients). The patients were divided into 4 groups based on the blood glucose level (BS) and the insulinogenic index (II): group 1, normal (n = 9); group 2, impaired glucose tolerance (IGT, n = 12); group 3, mild diabetes mellitus (DM) (II > 0.4, n = 12); and group 4, severe DM (II ≤ 0.4, n = 12). Percent (%) dose uptake of FDG in the normal regions of the myocardium was not significantly different in groups 1, 2, and 3, but it was much lower in group 4 than in groups 1 and 2. In groups 2, 3, and 4, % dose uptake showed a definite negative correlation with BS 60 min after glucose loading ($r = -0.450$, $p < 0.05$), and a close positive correlation with II ($r = 0.363$, $p < 0.05$). These findings indicate that myocardial FDG uptake in normal regions is not greatly impaired in patients with IGT or mild DM. Myocardial viability can be assessed by oral glucose loading in patients with IGT and mild DM as well as in patients with normal glucose tolerance.

Key words: glucose tolerance, FDG, % dose uptake, insulin secretion, insulin resistance